

WIND RIVER IRRIGATION PROJECT, LEFTHAND MAIN  
DIVERSION AND LEFTHAND WASTEWAY-CHECK STRUCTURES  
(Lefthand Unit)  
Wind River Indian Reservation  
Riverton vicinity  
Fremont County  
Wyoming

HAER WY-95-C  
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PHOTOGRAPHS

WRITTEN HISTORICAL AND DESCRIPTIVE DATA

HISTORIC AMERICAN ENGINEERING RECORD  
INTERMOUNTAIN REGIONAL OFFICE  
National Park Service  
U.S. Department of the Interior  
12795 West Alameda Parkway  
Denver, CO 80228

## HISTORIC AMERICAN ENGINEERING RECORD

### WIND RIVER IRRIGATION PROJECT, LEFTHAND MAIN DIVERSION AND LEFTHAND WASTEWAY-CHECK STRUCTURES (Wind River Irrigation Project, Lefthand Unit)

HAER No. WY-95-C

#### I. INTRODUCTION

**Location:** The Lefthand Main Diversion Structure lies along the right (south) bank of the Big Wind River. The Lefthand Wasteway-Check Structure lies approximately 1/4 mile from the Lefthand Main Diversion Structure on the Lefthand Canal. These structures are approximately six miles west of the town of Riverton, Wyoming. The structures are located within the Lefthand Unit, Wind River Irrigation Project, Wind River Indian Reservation, Fremont County, Wyoming.

**Quad:** Pavillion SE, Wyoming

**UTM:** Zone: 12; Easting 684583; Northing 4780090

**Date of Construction** ca. 1907

**Present Owners:** United States Government

**Present Use:** Both the Lefthand Main Diversion and Wasteway-Check Structures continue to serve their original function but are in poor condition and dangerous to ditch riders.

**Significance:** The Lefthand Main Diversion and Lefthand Wasteway-Check Structures are irrigation facility components of the Lefthand Canal which diverts water from the Big Wind River. Originally called the Big Wind River Ditch, Lefthand Canal is one of two ditches constructed in 1907 as part of the Sub-Agency Ditch system, one of the several irrigation units begun after the establishment of the Wind River Irrigation Project in 1905.

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## II. HISTORY

In 1894, the U.S. government granted the first authorized expenditure for irrigation construction on the Wind River Indian Reservation. This expenditure resulted in the construction of the Ray Canal (today a component of the Little Wind River Unit). By 1895, the Ray Canal extended for 10 miles. After 1895, several other efforts to construct irrigation ditches within the reservation were attempted but never completed.<sup>1</sup>

However, the Big Wind River ditch (the predecessor of the Lefthand Canal) was reportedly begun in 1896, but no further information regarding this construction is available. A 1901 report proposed that the Wind River ditch “divert water from the Big Wind River for 32,400 acres of bench land on the south side of the river” but further investigation found the cost prohibitive and the ditch was abandoned. It is unclear how much progress was made, if any, on this ditch at this time.<sup>2</sup>

The Act of March 3, 1905, known as the McLaughlin Treaty, provided initial funding for the Wind River Irrigation Project and construction began on several canals that diverted water from the Little Wind River. Two years later, William H. Cole, Chief Inspector of Irrigation, authorized additional construction within the Wind River Irrigation Project. In 1907, construction began on the Sub-Agency Ditch system. This system consisted of two canals, the Sub-Agency Ditch and the Big Wind River Ditch. The Big Wind River Ditch headed at the south side of the Big Wind River and merged at its lower end with the Sub-Agency Ditch. Occasionally, the Big Wind River Ditch was also called the Left Hand Ditch during the early twentieth century.<sup>3</sup>

In 1916, extensive work on approximately four miles of Big Wind River Ditch enlarged and reconstructed its upper end to improve its carrying capacity. Although built as a direct diversion, changeable river channels often necessitated construction of

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<sup>1</sup> Blain Fandrich, *The Wind River Irrigation Project: A Class I overview of Irrigation on the Wind River Reservation, Fremont County, Wyoming*, prepared for Cooper Zietz Engineers by Ethnoscience, Inc., Billings, MT, 2007, 8-9, 10-11.

<sup>2</sup> Henry Clotts, *Wind River Irrigation Project History and Irrigation Data 1939*, manuscript on file, Rocky Mountain Region Library, Bureau of Indian Affairs, Billings, MT, 1939, 2-3. Clotts reports that a fire in 1907 destroyed most project records.

<sup>3</sup> Clotts, 3; Wilbur S. Hanna, *Annual Report 1917 District No. 3*, U.S. Indian Irrigation Service, on file, Rocky Mountain Region Library, Bureau of Indian Affairs, Billings, MT, 1917, 46; Wilbur S. Hanna, *Annual Report 1920 District No. 3*, U.S. Indian Irrigation Service, on file, Rocky Mountain Region Library, Bureau of Indian Affairs, Billings, MT, 1920, 61.

temporary dams in the Big Wind River to carry water into the correct channel to the diversion location.<sup>4</sup>

U.S. Indian Irrigation Service reports in the 1920s interchangeably referred to the Left Hand Ditch and Big Wind River Ditch, but it remained within the Sub-Agency System until the 1930s. The 1930 U.S. Irrigation Service annual report first listed the Lefthand Unit (now spelled as one word) as one of the five units within the Wind River Irrigation Project, and therefore separate from the Sub-Agency Unit. The reasoning for this change is unknown.<sup>5</sup>

In 1939, the Lefthand Unit consisted of five miles of main canal with 36 structures and 13 miles of laterals with 101 structures. At this time, the Lefthand Unit irrigated 495 acres of Indian lands, 494 acres of leased Indian lands and 497 acres of non-Indian lands, totaling 1486 acres. It was considered 80 percent completed, lacking some laterals to reach irrigable lands. In 1968, the Lefthand Unit totaled 29.5 miles that consisted of one main canal and laterals.<sup>6</sup>

### III. ARCHITECTURAL DESCRIPTION

The Lefthand Main Diversion and Lefthand Wasteway-Check Structures are irrigation facility components of the Lefthand Unit, Wind River Irrigation Project, Wind River Indian Reservation, Wyoming. These two non-contiguous structures are located approximately 1/4 mile apart: the diversion structure lies along the Big Wind River and the wasteway-check structure is situated on the Lefthand Canal (Figure 1). Due to their proximity to one another, they are administered as one structure.

The Lefthand Main Diversion Structure lies on the right (south) bank of the Big Wind River. The diversion diverts water from the main channel of the Big Wind River

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<sup>4</sup> Hanna, *Annual Report 1917*, 46; Hanna, *Annual Report 1920*, 61-62.

<sup>5</sup> Wilbur S. Hanna, *Annual Report 1921 District No. 3*, U.S. Indian Irrigation Service, on file, Rocky Mountain Region Library, Bureau of Indian Affairs, Billings, MT, 1921, 92; Wilbur S. Hanna, *Annual Report 1922 District No. 3*, U.S. Indian Irrigation Service, on file, Rocky Mountain Region Library, Bureau of Indian Affairs, Billings, MT, 1922, 71; Wilbur S. Hanna, *Annual Report 1930 District No. 3*, U.S. Indian Irrigation Service, on file, Rocky Mountain Region Library, Bureau of Indian Affairs, Billings, MT, 1930, 52.

<sup>6</sup> Clotts, *Wind River Irrigation Project History*, 7, 14-15; United States Department of the Interior, Bureau of Indian Affairs, *Wind River Irrigation Project Wyoming 1968*, Billings Area Office, Billings, MT, 1968, 51.

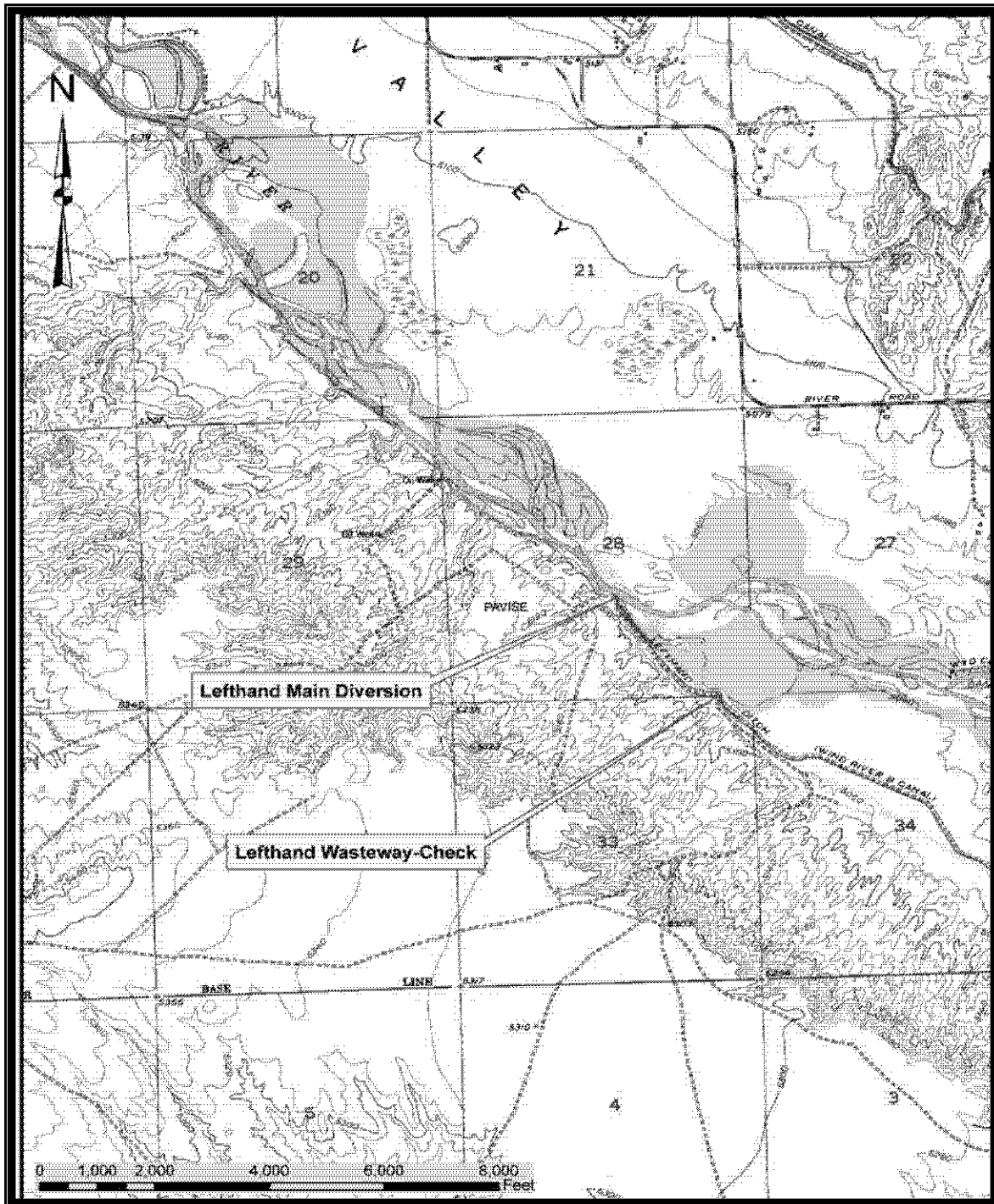


Figure 1. Lefthand Main Diversion and Lefthand Wasteway-Check Structures locations.

and carries the water into the Lefthand Canal. A gravel road accesses the diversion from the north and south and crosses over the diversion. Two headgates control the water supply into the canal, although they are presently inoperable with only skeleton cast iron framing and one bent threaded stem remaining. The 5'-0" x 5'-0" slide gate openings (the slide gates are missing) allow passage of water from the Big Wind River into the canal through two 30" concrete conduits that extend an approximate 18'-0" from the gate openings to the outlet into the canal channel. The conduits terminate at the outlet concrete headwall.

The Lefthand Diversion headwall holds the regulating headgates and provides bank protection. The headwall consists of three one-foot wide concrete wall segments. The upstream side wing wall extends 10'-0" at an approximate 45 degree angle into the river bank. The two headgates are confined in a 50'-0" concrete headwall. A 20'-0" slanted wing wall flares outward at 20 degrees and completes the headwall downstream. Riprap, consisting of large boulders upstream and car bodies downstream, lie along the river bank to protect from erosion.

The Lefthand Wasteway-Check Structure provides for the removal of canal water to safeguard the canal and controls water flow in the canal. The two components of the Lefthand Wasteway-Check Structures are connected by a 20'-0" concrete sidewall constructed at a 45 degree angle. A check structure controlling water volume on the canal is positioned immediately downstream from the wasteway.

The three-bay gated check controls the flow of water of the ditch and diverts the water from the Lefthand Canal through the wasteway and into the Lefthand waste channel. Originally, the check gate consisted of three 3'-0" x 3'-0" slide gates of cast iron framing confined in an 8'-0" concrete headwall. Today, all slide gates are gone and two gate wheels are missing. The water is carried approximately 13' through three 2'-0" concrete pipes from the headwall to the outlet. The outlet headwall is a substantial 24'-0" concrete wall.

The second component of the Lefthand Wasteway-Check Structure is the wasteway consisting of a horizontal steel beam with an elevated steel beam walkway extended between two concrete side walls. This wasteway structure diverts the waste flow into the Lefthand Waste channel. A vertical steel I-beam both serves as center support for the steel cross beam and as a vertical slot or guide for the stoplogs (check boards). Stoplogs are long, rectangular boards that are placed manually on top of each other and dropped into slots. The end slots are embedded into the wasteway's concrete sidewalls. Both side walls are 16'-0" in length.

#### IV. MODIFICATIONS

It is possible that modifications have occurred to the Lefthand Main Diversion and Lefthand Wasteway-Check Structures since their construction. However, there is no available record of any modifications. Routine maintenance and repairs have also been ongoing.

#### V. OWNERSHIP AND FUTURE

The U.S. Government has maintained ownership of the Lefthand Main Diversion and Lefthand Wasteway-Check Structures within the Lefthand Unit, Wind River Irrigation Project, since its construction.

The rehabilitation of the Lefthand Main Diversion and Lefthand Wasteway-Check Structures are part of the BIA irrigation rehabilitation effort addressing major operation and maintenance problems on the Wind River Irrigation Project. This is a multi-year project with plans to return various irrigation systems throughout the Rocky Mountain Region to fully functioning systems.

The rehabilitation of the Lefthand Main Diversion and Lefthand Wasteway-Check Structures will affect the historic qualities of the structures. At the Lefthand Main Diversion, the rehabilitation reflects a replacement in kind where existing features will be replaced by like features. All headwalls will remain in place with the exception of a 20'-0" segment that will be demolished and replaced. The existing slide gates will be removed and two new 3'-0" x 3'-0" slide gates will be installed. The existing 30" concrete culverts will be removed and replaced with 36'-0" reinforced concrete pipe (RCP). The existing outlet headwall will be demolished and a new headwall installed. The access road over the structure will be reconstructed.

The rehabilitation of the Lefthand Wasteway-Check Structure will significantly affect the historic design of the structure. The complete structure will be demolished. The new check will have concrete wing walls on the upstream and downstream sides. Two new slide gates will be contained in the new concrete headwall. The two replacement culverts will be 36" reinforced concrete pipe (RCP). The road over the structure will be reconstructed. The wasteway will be a concrete structure with stoplog (check board) guides in the headwalls. The wasteway will be topped with a precast concrete deck and two sidewalls will extend into the Lefthand waste channel.

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